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SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF ALAMEDA

CENTER FOR BIOLOGICAL DIVERSITY, and SIERRA CLUB, non-profit corporations,

Petitioners,

vs.

CALIFORNIA DEPARTMENT OF CONSERVATION, DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES; and DOES 1 through 20, inclusive,

Respondents.

AERA ENERGY LLC, BERRY PETROLEUM COMPANY LLC, CALIFORNIA RESOURCES CORPORATION, CHEVRON U.S.A. INC., FREEPORT-MCMORAN OIL & GAS LLC, LINN ENERGY HOLDINGS LLC, and MACPHERSON OIL COMPANY,

Respondents-in-Intervention.

Case No. RG15769302

Assigned for all purposes to the Hon. Robert B. Freedman, Dept. 20

SUPPLEMENTAL DECLARATION OF NATHANIEL JOHNSON IN SUPPORT OF MOTION FOR LEAVE TO INTERVENE BY AERA ENERGY LLC, BERRY PETROLEUM COMPANY LLC, CALIFORNIA RESOURCES CORPORATION, CHEVRON U.S.A. INC., FREEPORT-MCMORAN OIL & GAS LLC, LINN ENERGY HOLDINGS LLC, AND MACPHERSON OIL COMPANY

[*Reply in Support of Motion to Intervene and Response to Evidentiary Objections, filed concurrently*]

Date: June 15, 2015
Time: 2:30 p.m.
Dept.: 17

Action Filed: May 7, 2015
Trial Date: None set

I, Nathaniel Johnson, declare:

1. I am an associate at the law firm of Gibson, Dunn & Crutcher, LLP ("Gibson Dunn"), counsel for Respondents-in-Intervention, Aera Energy LLC, Berry Petroleum Company LLC, California Resources Corporation, Chevron U.S.A. Inc., Freeport-McMoRan Oil & Gas LLC, LINN Energy Holdings LLC, and Macpherson Oil Company (collectively, "Energy Companies") in the above-captioned matter. I have personal knowledge of the facts set forth below and if called as a witness, could and would testify competently to those facts under oath. This declaration is made in support of the Motion for Leave to Intervene by Aera Energy LLC, Berry Petroleum Company LLC, California Resources Corporation, Chevron U.S.A. Inc., Freeport-McMoRan Oil & Gas LLC, LINN Energy Holdings LLC, and Macpherson Oil Company.

2. Attached hereto as Exhibit 1 is a true and correct copy of a memorandum from Matthew Rodriquez, Secretary of the California Environmental Protection Agency, to Cliff Rechtschaffen, Senior Advisor to the Office of the Governor, and John Laird, Secretary of the California Natural Resources Agency, dated March 2, 2015, and concerning the CalEPA Review of the UIC Program. The document was printed from the website for CalEPA at the website URL: http://www.calepa.ca.gov/Publications/Reports/2015/UICFindings.pdf. Under my direction and control, a true and correct copy of this document was attached to this Declaration as Exhibit 1

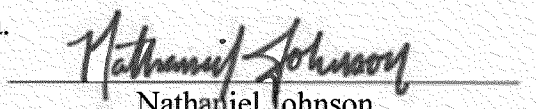
3. Attached hereto as Exhibit 2 is a true and correct copy of a press release from DOGGR, dated April 2, 2015, and titled "California Department of Conservation Issues Notice of Emergency Regulations for Underground Injection." The document was printed from the website for DOGGR at the website URL: http://www.conservation.ca.gov/index/news/Documents/2015-06%20UIC%20emergency%20regulations.pdf. Under my direction and control, a true and correct copy of this document was attached to this Declaration as Exhibit 2.

4. Attached hereto as Exhibit 3 is a true and correct copy of excerpts from a letter sent by Steve Bohlen, State Oil and Gas Supervisor, and Jonathan Bishop, Chief Deputy Director of the State Board, to Jane Diamond, Director, Water Division at U.S. EPA, Region 9, dated February 6, 2015. The document was printed from the website for DOGGR at the website URL: ftp://ftp.consrv.ca.gov/pub/oil/UIC%20Files/FINAL_Dual%20Letterhead_US%20EPA%20Letter.pdf.

Under my direction and control, a true and correct copy of this excerpted document was attached to this Declaration as Exhibit 3.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on June 12, 2015 in Los Angeles, California.



Nathaniel Johnson

EXHIBIT 1

CalEPA
California Environmental
Protection Agency

Edmund G. Brown Jr.
Governor
Matthew Rodriquez
Secretary for Environmental Protection

MEMO: CalEPA Review of UIC Program

TO: Cliff Rechtschaffen, Senior Advisor
Office of the Governor

John Laird, Secretary
California Natural Resources Agency

FROM: Matthew Rodriquez, Secretary
California Environmental Protection Agency

DATE: March 2, 2015

For the last eight months, the State of California, through the Division of Oil, Gas & Geothermal Resources (DOGGR) and the State Water Resources Control Board (State Water Board), and in coordination with the United States Environmental Protection Agency (U.S. EPA), has been systematically reviewing thousands of wastewater disposal and enhanced oil recovery wells to determine their proximity to water supply wells and the potential for contamination of any drinking water. Where the risk of contamination is unacceptable, the State has ordered and will continue to order those wells be shut in. As of early February 2015 the State has identified approximately 2,500 wastewater disposal and enhanced oil recovery wells injecting into potentially non-exempt zones, 2,100 of which are still active. Of these, there are approximately 140 active wastewater disposal wells injecting into aquifers with Total Dissolved Solids (TDS) less than 3,000 mg/l, a key indicator under the federal Safe Drinking Water Act (SDWA) of higher quality water. (DOGGR regulates over 50,000 oilfield injection wells in California.) To date, preliminary water sampling of select, high-risk groundwater supply wells has not detected any contamination from oil production wastewater.

Three years ago, DOGGR notified U.S. EPA that discrepancies and confusion concerning 30-year-old agreements by which the federal government granted the State regulatory authority over wastewater disposal wells likely led to the permitted injection of oil production wastewater into aquifers that are or could become sources of drinking water. In some cases, this occurred due to conflicting documentation, both in California and with the federal government, as to whether 11 aquifers were exempted from regulation when the State received authority from U.S. EPA to implement the Underground Injection Control (UIC) program of the Safe Drinking Water Act. In other cases, this permitting and injection occurred due to confusion over the precise borders of aquifers that had been authorized for injection.

In June 2014 the Governor's Office requested that the California Environmental Protection Agency (CalEPA) perform an independent review of the state's Underground Injection Control Program, as administered by DOGGR over the decades, to better understand how this occurred. This memo presents CalEPA's findings.

Background

The federal Safe Drinking Water Act was enacted in 1974 to protect public health by regulating the nation's public drinking water and its sources. Pursuant to the SDWA, U.S. EPA

promulgated regulations creating an Underground Injection Control Program to protect from contamination aquifers that are, or could become, potential sources of drinking water.

In 1981, California's Division of Oil and Gas (DOG[1]) applied to U.S. EPA to become the primary enforcing agency of the UIC portion of the SDWA in California; DOG was granted primacy over the program in 1983. As part of the application process, DOG proposed to exempt certain aquifers from regulation under the UIC Program (so-called "exempt aquifers") because they were not, and would not become, sources of drinking water. Most but not all of these proposed aquifers -- which were either hydrocarbon-producing (i.e. a source of oil or gas) or already being injected with oil production wastewater -- were exempted under a Memorandum of Agreement between DOG and U.S. EPA signed on September 28 and 29, 1982.

This first version of the Memorandum of Agreement (MOA1) expressly designated as non-exempt 11 aquifers that DOG had sought to exempt and required all existing injection wells into those aquifers to be phased out over 18 months. These non-hydrocarbon-producing aquifers all had a TDS concentration below 3,000 mg/l. However, all 11 were being used at the time of the Primacy Application for wastewater disposal and, even at that point, some had been injected into for decades.

As will be discussed below, at least by December 3, 1982, a second version of that Memorandum (MOA2) was being circulated between DOG and U.S. EPA *exempting* the 11 aquifers that had been *rejected* for exemption in the prior version. MOA1 and MOA2 were virtually identical, differing only in their treatment of the 11 aquifers and in the omission of one sentence from MOA2 requiring that injection in non-exempt aquifers be phased out within 18 months. Adding to the confusion, MOA2's signature page was photocopied from MOA1, so both documents share the same date and signatures. From the early 1980s on, DOG (then DOGGR) staff and U.S. EPA staff treated the list of exempt aquifers in MOA2 as correct; after a number of years, staff was no longer even aware of the fact that MOA1 had existed.

Further, under the terms of a 1983 interagency agreement (renewed in 1988) between the Department of Conservation (which oversaw DOG) and the State Water Board, the Regional Water Quality Control Boards were to review all well permit applications approved by DOG to ensure wastewater disposal would not degrade state waters. However, having other priorities and no dedicated staff or resources for an independent review, the Regional Boards generally deferred to DOGGR's determination of whether or not an aquifer was exempt without scrutinizing the applications.

DOGGR and U.S. EPA Agreed to Exempt the 11 Aquifers, But May Not Have Followed Regulatory Procedures

As discussed below, U.S. EPA and DOG agreed in the early 1980s to exempt the 11 aquifers and seemingly adopted MOA2 as the basis for permitting of wastewater disposal wells. Nevertheless, there are questions about whether this was done in accordance with federal UIC regulations. Procedurally, there is conflicting evidence as to whether MOA2 was approved as part of the state's initial Primacy Application in February 1983 or after an aquifer exemption appeals process in June 1983. There is also little evidence in the files of state and federal agencies justifying the decision to exempt the 11 aquifers in MOA2.

After representatives of DOG and U.S. EPA Region 9 signed MOA1 on September 28 and 29 (respectively), 1982, the agreement was forwarded to U.S. EPA's national office for review. The

[1] DOG was the precursor entity to DOGGR. The name change occurred in 1992.

national office returned the agreement, asking for changes. Notes from an internal U.S. EPA phone conversation indicate that the national office specifically requested that the 18-month phase-out of the injection wells in the 11 non-exempt aquifers be removed. The next version of the Memorandum sent by Region 9 to the national office for review, on December 13, was MOA2: the 18-month phase-out had been removed *and* the 11 non-exempt aquifers had been transposed into the list of exempt aquifers. In transmitting MOA2, Region 9 noted that "with the addition of these attachments, all known issues regarding the Primacy Application have been resolved." The national office submitted California's Primacy Application, including a version of the Memorandum, to the U.S. EPA Administrator for review, which was approved on February 4, 1983 (effective March 14, 1983). However, which version was transmitted to the Administrator, MOA1 or MOA2, is unknown.

The federal regulations[2] memorializing the delegation of UIC Primacy to DOG incorporate by reference the Memorandum signed on September 29, 1982; however, because MOA1 and MOA2 have identical signature pages it is unclear which version is being referred to. MOA2 is the last version of the Memorandum that DOG and Region 9 agreed to and presumably would have been the version transmitted to the Administrator. DOG files include a version of MOA1 with "VOID" handwritten across the top and strikethroughs of the 11 non-exempt aquifers that were ultimately exempted under MOA2. Similarly, U.S. EPA files include a version of MOA2 with asterisks indicating the 11 aquifers that had been newly exempted. This suggests MOA2 was adopted along with the transfer of UIC Program primacy.

In February and April 1983, however, DOG wrote oil operators injecting into the 11 aquifers to notify them the aquifers were not exempt and that they had 18 months to cease injecting. This would only be the case if MOA1 were correct (as MOA2 had exempted those aquifers). In June 1983 DOG wrote a second set of letters saying DOG's appeal of these aquifers' status to U.S. EPA had been successful, and they were now exempt. Aside from these representations, there is no evidence DOG put together an appeals packet with information justifying an exemption and transmitted it to U.S. EPA. Nor is there evidence that the procedures required to approve a post-primacy aquifer exemption were followed, which at minimum required the written approval of the Administrator and may have required a new public process and publication in the *Federal Register*.

Even more confusingly, during the two-month period when the "appeal" was apparently being considered, the Department of Conservation and the State Water Board signed their interagency agreement to review well permit applications, attaching for reference MOA2 as the valid agreement between DOG and U.S. EPA. Other documents similarly suggest that, despite the shut-down notice letters, the 11 aquifers had already been exempted per MOA2. Two February and March 1983 letters from oil producers expressed concern about one of the 11 aquifers being non-exempt; DOG district staff wrote across the top of both letters that "[t]his zone is exempted." A February 1983 summary of the responses to public comment regarding DOG's 1983 Primacy Application, found in U.S. EPA files, states that U.S. EPA approved "all but two" of the aquifers DOG had requested for exemption, short of the 11 listed in MOA1.[3]

Regardless of timing, by early or mid-1983 U.S. EPA and DOG appear to have agreed that MOA2 governed and the 11 aquifers were exempt. Both agencies treated the aquifers as exempt from that point through 2012, when DOGGR staff re-discovered MOA1 and notified U.S. EPA. For example:

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[2] 40 CFR §147.250 (1984).

[3] MOA2 listed no non-exempt aquifers, but DOG and U.S. EPA would discuss exempting two new aquifers in late 1983, which may have been the two referred to.

- An undated DOGGR letter, likely from 1983, includes a list of exempt aquifers and "recently" exempted aquifers that includes the 11 aquifers. This list would be periodically reissued by DOGGR management to district office staff into the 1990s.
- In 1984, U.S. EPA noted in the *Federal Register* that some parties were confused over which aquifers had been exempted in California and pledged that U.S. EPA Region 9 would maintain a public list of all exempt aquifers. The next year, in 1985, U.S. EPA wrote an oil producers association clarifying which aquifers had been exempted in California, attaching the list of exempt aquifers from MOA2, which included the 11 formerly non-exempt aquifers from MOA1.
- From at least the late 1980s through the 2010s, DOGGR's UIC Manual of Instruction, an injection well permitting manual issued to all the districts, also included a copy of MOA2.
- In 2011, an independent audit of DOGGR's UIC permitting program prepared at the request of U.S. EPA Region 9 included an attachment of MOA2 as the relevant agreement.

DOGGR Also Permitted Injection in Non-Exempt Zones

About half of the active wastewater disposal wells injecting into sub-3,000 mg/l TDS aquifers are injecting into the 11 aquifers that were listed as *non-exempt* in MOA1, but *exempt* in MOA2. The remaining half are the result of different types of permitting errors. Until the 2010s, project and well permitting decisions were mostly delegated to DOGGR's six district offices. DOGGR headquarters in Sacramento generally did not review district permitting decisions; nor did it provide standardized guidance on identifying the injectable zone for exempt aquifers. Limited oversight from DOGGR headquarters may have contributed to several types of permitting errors, including:

- Border Confusion: Permits were granted for injection wells that fell just *outside* the productive limits of a hydrocarbon-producing field but *inside* the slightly larger administrative boundaries for that field.[4] Many DOGGR staff believed the administrative limits to define an exempt aquifer. However, the state's UIC Primacy Application to U.S. EPA had proposed to exempt certain hydrocarbon-producing aquifers based on their 1973 and 1974 productive limits, and not their administrative limits.
- Expanding Productive Limits: With advances in oil extraction technology, the effective productive limits for many fields have expanded since they were drawn in the 1970s. Staff may have believed that injection was permitted in the actual, present productive limits of a field, rather than looking to the boundaries established in the Primacy Application.
- Depth Confusion: Some injection wells were within the areal boundaries of an exempt aquifer, but were nonetheless injecting above or below the exempt aquifer, into a non-exempt zone. It appears, in certain cases, staff based their permitting decisions only on the contour maps included in the Primacy Application without also looking to the depth

[4] "Productive limits" means the outermost areas of a field where hydrocarbons could be extracted. They differ from administrative field limits, which are the administrative boundaries created using the Public Land Survey System. In practice, productive limits have expanded over time with improvements in oil production technology.

interval for the exempted aquifer, which was produced in a table elsewhere in the Primacy Application.

- Partial Exemption: In certain cases, only portions of an aquifer were exempted and not the whole aquifer. Staff granting permits based solely off of a list of which field and zone had been exempted, without referring back to the Primacy Application, may have mistakenly believed the whole aquifer was exempt.

Recent Discovery and Actions

DOGGR staff first became aware of a potential systemic problem with the aquifer exemption process in 2011, when a headquarters staffer temporarily working in a district office noticed a discrepancy between lists of exempted aquifers. In late 2011, DOGGR staff further discovered that there were two different versions of the Memorandum in DOGGR files: MOA1 classifying the 11 aquifers as not exempt and MOA2 classifying them as exempt. DOGGR notified U.S. EPA in early 2012. DOGGR and U.S. EPA agreed that DOGGR would identify all the wells injecting into non-exempt zones and ask oil operators in those zones to start the process of applying for an aquifer exemption.

In 2014 the Central Valley Regional Water Board independently discovered that injection had been permitted in sub-3,000 mg/l TDS aquifers. It notified DOGGR that there may be groundwater supply wells at risk. Until that time, DOGGR had not treated the injection wells, which are located in oil fields, as a significant public health risk, although questions about this had been raised within DOGGR. The Governor's office assembled an inter-agency team to assess and address any public health risk.

The State, in coordination with U.S. EPA, responded by initiating a process to review most of the state's injection wells, prioritizing wells that were injecting into non-exempt, non-hydrocarbon-bearing aquifers, as well as the 11 aquifers which had historically been treated as exempt. Thus far, the State Water Board has evaluated just over 200 injection wells of highest concern for potential risk to water supplies. In 2014, 11 injection wells were ordered shut-in, along with orders requiring oil producers to provide testing of injection well injectate and nearby groundwater supply wells. In March, 2015, DOGGR confirmed or requested the closure of 12 additional wells. Injection permits for 11 wells were voluntarily relinquished at DOGGR's request. A 12th well was ordered shut in by DOGGR.

Additionally, DOGGR headquarters is now doing a second review of all new or expanded project permit applications prior to approval by the districts. This will provide another opportunity to correct any permitting errors and will promote greater permitting consistency across the six DOGGR districts.

Going forward, in conjunction with U.S. EPA, DOGGR and the State Water Board have proposed an enforceable compliance schedule to eliminate injection into non-exempt aquifers, as outlined in a February 6, 2015 letter to U.S. EPA. Specifically, for non-exempt aquifers between 3,000 to 10,000 mg/l TDS, all injections must cease by February 15, 2017, unless an aquifer exemption is applied for by the state and approved by U.S. EPA. For non-exempt aquifers with less than 3,000 mg/l TDS, the deadline to stop injecting is October 15, or immediately where the injection is potentially impacting water supplies. For the 11 aquifers historically treated as exempt, DOGGR and the State Water Board will work with U.S. EPA on a case-by-case basis to determine by February 15, 2017, whether these aquifers qualify for exemption. During the review process, DOGGR will continue to issue emergency orders to stop any injection that potentially impacts water supply wells.

EXHIBIT 2

DEPARTMENT OF CONSERVATION

PUBLIC AFFAIRS OFFICE

801 K STREET • MS 24-07 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 323-1886 • FAX 916 / 323-1887 • TDD 916 / 324-2555 • WEB SITE conservation.ca.gov

FOR IMMEDIATE RELEASE
NR#2015-06
April 2, 2015

Contact:
Teresa Schilling/Don Drysdale
(916) 323-1886

CALIFORNIA DEPARTMENT OF CONSERVATION ISSUES NOTICE OF EMERGENCY REGULATIONS FOR UNDERGROUND INJECTION

SACRAMENTO – The California Department of Conservation (DOC) today gave notice of an emergency rulemaking package to regulate underground injection related to oil and natural gas production. The emergency rulemaking puts in place concrete steps and deadlines agreed to by the U.S. Environmental Protection Agency for the Division of Oil and Gas Resources and the State Water Resources Control Board

"This is a significant step in California's commitment to ensure that underground injection practices comply with the federal Safe Drinking Water Act (SDWA) and to quickly eliminate risks to California's precious water resources," State Oil & Gas Supervisor Dr. Steven Bohlen said.

DOC's Division of Oil, Gas, and Geothermal Resources (DOGGR) has primary authority through the U.S. EPA to regulate underground injection wells related to oil and gas operations in California. In 2011, DOGGR raised concerns about underground injection, asking for an independent audit and alerting the Legislature and U.S. EPA to the audit's findings.

It was discovered that some injection was occurring into aquifers that had not been approved ("exempted") by the U.S. EPA under the terms of the SDWA. That discovery prompted last summer the beginning of an evaluation of all 50,000 injection wells in the state, with an immediate emphasis on those drilled into zones with the highest water quality.

The rulemaking sets in regulation a schedule the three government agencies have established to eliminate all injection into non-exempt aquifers and ensure California oil and gas activities are compliant with the SDWA. The regulations, available on DOC's website, will be provided to the Office of Administrative Law on April 9 to ensure they are in place no later than April 30.

Under the emergency regulations, the deadline to stop injecting into aquifers that do not naturally contain oil reservoirs and with water quality of less than 3,000 milligrams per liter/total dissolved solids (TDS) is October 15, 2015, or sooner if it appears that water supplies are possibly threatened. Injection into all other non-exempt aquifers with water quality of less than 10,000 TDS must cease by February 15, 2017. Injection into

eleven other specified aquifers with unclear exemption status must cease by December 31, 2016 if the U.S. EPA determines they should remain exempt. The SDWA does not apply to water with TDS greater than 10,000 TDS.

Injection can continue if the state applies for and receives an aquifer exemption from U.S. EPA. Even if an aquifer has very low TDS (the state and federal standard for drinking water is 500 TDS), an exemption may be granted if the water naturally contains oil or high levels of minerals such as arsenic or boron, making the water unfit for either drinking or agricultural use.

"Our agreement with U.S. EPA is to review all injection wells in the state," Bohlen explained. "Within the next few weeks the high-priority wells will be complete. If they are too close to a beneficial use well, we will issue an order to shut them down. We've already closed down 23 injection wells. We understand public concern about their water. To be clear, no contamination has been found related to oil and gas operations, but we're taking a conservative, cautious approach.

The Office of Administrative Law (OAL) has 10 working days to review the emergency regulations. OAL will consult with DOC before providing any response to comments. If OAL approves the rulemaking package, the interim rules will be in place at the end of the 10-day review. Information about the emergency rulemaking process can be found at http://oal.ca.gov/Emergency_Regulation_Process.htm.

Members of the public wishing to comment on the emergency regulations must do so directly to OAL within five calendar days of the posting of the proposed emergency regulations on the OAL website. Submit comments to:

Mail: OAL Reference Attorney
300 Capitol Mall, Suite 1250
Sacramento, California 95814

Fax: (916) 323-6826 E-mail:staff@oal.ca.gov

Those submitting a comment to OAL must also submit a copy to the Department:

Mail: Department of Conservation
801 K Street, MS 24-02
Sacramento, CA 95814
ATTN: Aquifer Exemption Emergency Rulemaking

Fax: (916) 324-0948 E-mail: UIC.regulations@conservation.ca.gov

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EXHIBIT 3

DEPARTMENT OF CONSERVATION
DIVISION OF OIL, GAS, & GEOTHERMAL RESOURCES

February 6, 2015

Ms. Jane Diamond
Director, Water Division
Region IX
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Re: Class II Oil and Gas Underground Injection Control

Dear Ms. Diamond:

Thank you for your letter of December 22, 2014, regarding the several meetings and dialogue we have been engaging in for the past several months, and your request for a more detailed plan of action to address issues with California's Class II Oil and Gas Underground Injection Control program.

Our agencies share a common goal with the United States Environmental Protection Agency (US EPA): to ensure public health and safety and the protection of groundwater resources for California residents who live and work near oil producing areas of California. The Division of Oil, Gas, and Geothermal Resources (Division) is responsible for ensuring that operators of oil and gas injection wells adhere to environmental rules and permit requirements that protect groundwater and other resources. The State Water Resources Control Board (State Water Board) assists the Division with the protection of water resources. Consistent with our mutual roles related to ongoing injection activities, the Division and the State Water Board are working closely together for more integrated oversight of the underground injection control program.

Following a discussion of the relevant background, we lay out the intended approach jointly developed by the Division and the State Water Board to address what has been the primary focus of our discussions since last summer: details about the review and, where necessary, redirection of underground injection operations in this State. We then address your request for detail on our intended plan to meet the critique expressed in the 2011 report of the Horsley Witten Group (Horsley Witten). Finally, we conclude with a discussion of plans to communicate these developments to the public.

BACKGROUND

Oil and gas production in California is a $34 billion annual industry, employing more than 25,000 people with an annual payroll of over $1.5 billion. California is the third largest oil-producing state in the nation, producing about 575,000 barrels per day. Property and other tax payments to the State and local governments from the industry amount to about $800 million annually. There are approximately 90,000 active or idle production and injection wells in the State.

Injection wells have been an integral part of California's oil and gas operations for more than 50 years. Currently, over 50,000 oilfield injection wells are operating in the State. Injection wells are used to increase oil recovery and to safely dispose of fluid produced with oil and natural gas. About 75 percent of California's oil production is the result of Enhanced Oil Recovery (EOR) methods such as steam flood, cyclic steam, water flood, and natural gas injection. Of these injection wells subject to UIC regulations, approximately 1,500 are fluid disposal wells, which are necessary to re-inject water produced with oil and gas and other fluids that cannot be disposed of through any other method, such as treatment, beneficial use, or recycling for other industrial applications. Most of the oil and gas fields in the State are quite mature. Many are in the waning stages of their productive cycle and require EOR techniques for continued development. The use of injection wells has been increasing in recent years. The increased use of injection potentially creates additional health and safety risks.

The protection of California's aquifers from contamination is a matter of the highest priority for the Division and the State Water Board, and of special importance given the state of emergency resulting from our unprecedented drought. Therefore, this effort to modernize the regulation of the State's injection wells must be both urgent and thorough. As explained more fully below, the Division has begun systematically reviewing these wells and applicable regulations as part of its mandate to protect public health and safety.

2011 Audit and Horsley Witten Report

In 2010, the Division worked with US EPA to conduct an audit to review the Division's practices and regulations, and ensure the Division's compliance with its obligations to properly administer its Class II injection program as a primacy state under the US Safe Drinking Water Act (SDWA) and applicable California law. The audit, conducted by the Horsley Witten Group, was completed in the summer of 2011. Horsley Witten highlighted several areas of concern, and the US EPA requested a plan to address the gaps identified. The Division responded in November 2012 (Enclosure A) by committing to adopt regulations and provide additional resources to close the gaps identified in the audit and create a stronger, more robust regulatory program.

In 2013, the Department took important steps toward meeting this commitment, including:

- Added 36 staff positions and enhanced staff training on UIC Program mandates and requirements
- Added resources to address orphan well plugging and abandonment
- Worked with the Legislature to help it enact revisions for the financial requirements for bonding
- Established a Division monitoring and compliance unit to conduct internal assessment of the UIC Program

Injection Project Review and Aquifer Exemptions

The Division acknowledges that in the past it has approved UIC projects in zones with aquifers lacking exemptions. The Division has not kept up with the task of applying for the necessary aquifer exemptions in hydrocarbon-bearing zones required by statute, even though many of these zones possess attributes that would qualify them for exemption. The Division has thus been slow to reconcile the reality that industry has expanded the productive limits of oil fields established in the 1982 primacy agreement with SDWA requirements to obtain aquifer exemptions.

Complicating matters, 11 aquifers with historical injection activities before 1982 were described in State documents in the early 1980s as proposed for exemption, and were endorsed as exempt in subsequent federal documents.[1] This led to the issuance of a number of injection permits in those 11 aquifers. However, the geologic basis for such exemptions is now in question. Therefore, in addition to the zones of aquifers that are lacking exemptions, these 11 aquifers that have historically been treated as exempt will also be evaluated to determine their appropriate exemption status.

Injection Project Review Process

The Division acknowledges injection project review continues, and a process has been developed to determine the wells with the highest risks associated with injection, and the steps to be taken to bring injection well permits into compliance with the primacy agreement with US EPA. This review examines the following groups of wells, in this order:

[1] Among these documents are (1) a December 13, 1982, Region IX memo forwarding to US EPA headquarters a version of the Memorandum of Agreement containing no significant exemption denials, described by Region IX as resolving "all known issues" with California's primacy application, and (2) a May 17, 1985, letter from Frank Covington, US EPA's then-Director of the Water Management Division for Region IX that appears to confirm that US EPA did not deny any of the exemptions proposed by the Division in its primacy application.

Category 1 Wells: Class II water disposal wells injecting into non-exempt, non-hydrocarbon-bearing aquifers or the 11 aquifers historically treated as exempt

Category 2 Wells: Class II enhanced oil recovery (EOR) wells injecting into non-exempt, hydrocarbon-bearing aquifers

Category 3 Wells: Class II water disposal and EOR wells that are inside the surface boundaries of exempted aquifers, but that may nevertheless be injecting into a zone not exempted in the primacy agreement

This review covers over 30,000 wells, more than 29,000 of which are cyclic steam wells in hydrocarbon zones. Review of wells in Category 1 is nearing completion. Review of wells in Categories 2 and 3 is expected to be complete in early 2016 as annual project reviews are completed in compliance with regulation. When completed, this review will serve to clarify records and improve data quality so that the full review of the UIC program can be completed.

An initial list of wells injecting into non-exempt USDW aquifers was previously provided to US EPA. That list includes Category I and II wells. While updating, reviewing, and validating that list is ongoing, attached (Enclosure B) is a summary of the information. Of the 2,553 wells on the list, approximately 140 of the active wells have been tabbed for immediate review by the State Water Board because the aquifers are reported to be lacking hydrocarbons and contain water with less than 3,000 mg/l total dissolved solids (TDS). The State Water Board is currently reviewing those wells to screen for proximity to water supply wells or any other indication of risk of impact to drinking water and other beneficial uses.

The Division review and updating of all injection well records in this list will be completed by May 15, 2015. The State Water Board expects to be able to review each injection well at a rate of approximately 150 wells per month.

Aquifer Exemptions Process

Together, the Division and the State Water Board have identified a process for aquifer status evaluation and potential aquifer exemptions. Although injection is occurring into aquifers that have not been exempted and the 11 aquifers historically treated as exempt, the potential risks associated with such injection differ from zone to zone. Last summer, as you know, some injection wells that potentially presented health or environmental risks were ordered to cease injection, and the operators ordered to provide specific data so that the regulatory agencies could fully evaluate whether these

wells could potentially have had any measurable impact on nearby water supply wells. To date, the analytical data from the water supply wells that the State ordered to be tested have not shown any contamination of the water supply wells by oil and gas injection activities.

As injection activities in non-exempt aquifers and the 11 aquifers historically treated as exempt are delineated and described, the Division will require relevant oil and gas operators to obtain and prepare the necessary supporting documentation to justify aquifer exemptions. If these data support an aquifer exemption proposal, the Division will prepare and submit draft proposals for aquifer exemptions to the State Water Board for their concurrence. Once both agencies are satisfied with the proposed exemption and justification, the Division will submit the aquifer exemption applications to the US EPA for approval. A more detailed statement of the Division's and State Water Board's process for development of aquifer exemption applications is described in Enclosure C.

Going forward, the Division will take the following steps in this general order:

1. Work with US EPA to clearly articulate to the public the requirements for aquifer exemptions. This will be undertaken via two US EPA-sponsored workshops, one in Bakersfield the last week of February 2015 and the second in Los Angeles the last week of March 2015. The purpose of these workshops is to inform interested stakeholders, of the kind of data and data analysis essential to the development of a robust application by the State for an exemption of a portion of an aquifer from the SDWA by the US EPA.

2. Delineate a clear process for operators to supply the required supporting data to support and justify an aquifer exemption application. The Division will prepare its own guidance document to facilitate receiving appropriate information and data from operators to prepare justifiable aquifer exemption applications. A guidance document should be available by April 1, 2015.

Although this timeline suggests that the Division may not be able to move forward with aquifer exemptions until after April 1, 2015, this is not necessarily the case. The Division has already been evaluating the data supplied by operators for the preparation of a number of aquifer exemption requests by the State. Moreover, to enhance efficiency and reduce duplication of efforts, the Division is instructing oil and gas operators to develop a process by which several adjacent operators can combine data so that portions of aquifers relevant to the operations of different operators can be considered as a whole.

The Division will provide the data and an analysis of the data to the State Water Board for consultation prior to submitting them to US EPA. The Division will submit the exemption request to US EPA if the portion of the aquifer meets the criteria for exemption and the State Water Board determines that injection into the aquifer will not adversely affect existing or potential beneficial uses of groundwater.

Wind-Down of Existing Injection and Permitting of New Injection

The Division proposes to use a combination of administrative mechanisms to ensure that existing and new injection into non-exempt aquifers and the 11 aquifers historically treated as exempt is either phased out or covered by an aquifer exemption, and that any threats to drinking water or other beneficial uses of water are urgently addressed.

To summarize, the Division will use rulemaking to codify a wind-down schedule that provides transparency to the regulated community and the public at large. The schedule will provide for the phased elimination of new and existing injection into aquifers that have not been approved as exempt by the US EPA by February 15, 2017. New injection will be allowed only if strict criteria are met, and, like existing injection, will have to cease if no new exemption has been timely obtained. At the same time, the Division, in consultation with the State Water Board, will issue administrative orders to address specific circumstances where injection poses a threat to drinking water or other beneficial uses of water. Major highlights of the approach to address existing injection and new injection into these aquifers are presented below. A more detailed and complete description of the approach is contained in Enclosure D.

Rulemaking

By April 1, 2015, the Division will initiate rulemaking to establish a regulatory-compliance schedule to eliminate Class II injection into undisputedly non-exempt aquifers statewide. The proposed regulations will require the following:

1. The first principle of the regulations will be that all Class II injection into non-exempt aquifers with less than 10,000 TDS must, in all cases, cease by February 15, 2017, unless and until an aquifer exemption has been duly approved by US EPA. Injection may be ordered to cease earlier if a well is determined to potentially impact water supply wells,[2] as discussed further, below. ("Administrative Orders.")

[2] Injection wells potentially impacting water supply wells include injection wells into aquifers with 3,000 TDS or less that meet either of the following criteria: (1) the uppermost depth of the injection zone is less than 1,500 feet below ground surface (regardless of whether any existing supply wells are in the vicinity of the injection well), or (2) the injection depth is within 500 feet vertically and 1 mile horizontally of the screened portion of any existing water supply well.

2. Where a non-exempt aquifer contains 3,000 TDS or less and is non-hydrocarbon producing, injection must cease by October 15, 2015, unless and until an aquifer exemption has been approved by US EPA.

3. Where a non-exempt aquifer is hydrocarbon producing, new wells that are part of a previously approved project may be permitted if groundwater in the vicinity of the hydrocarbon-bearing zone does not currently have any beneficial use.[3] Such approvals will include the express condition that the permit expires on February 15, 2017, unless US EPA approves an aquifer exemption before then.

4. With respect to the 11 aquifers historically treated as exempt, the State Water Board and the Division will work with US EPA to evaluate these 11 aquifers. If any portion of these aquifers meets the criteria for exemption and the State Water Board determines that injection into the aquifer will not adversely affect existing or potential beneficial uses of groundwater, the Division will prepare and submit an exemption evaluation to US EPA. The evaluation and subsequent decision for these 11 aquifers will be completed by February 15, 2017. Either by the planned regulation or by other appropriate means, the Division may allow for limited new injection into these 11 aquifers in the unusual case where the proposed injection well is part of an approved project and an initial screening of the target zone shows that the zone contains hydrocarbons, has very high levels of naturally-occurring constituents (e.g., arsenic or boron), or there are other factors that make any affected groundwater unsuitable for beneficial use. Finally, the regulation would provide that any approval is subject to evaluation of the appropriate exemption status of the aquifer.

Administrative Orders

During the process of codifying the compliance schedule to phase out injection into non-exempt aquifers, the Division will issue administrative orders to halt any injection that potentially impacts water supply wells. The Division and the State Water Board are presently evaluating all injection into non-exempt USDWs and the 11 aquifers historically treated as exempt to identify potential for such impacts. The evaluation includes screening for water wells in the area of the injection well and collection and review of data regarding the water quality and depth of the aquifer where injection is occurring. Where the evaluation indicates that an injection well potentially impacts

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[3] Note that this does NOT include any use of produced water.

water supply wells, the Division will issue an emergency order to the operator to cease injecting immediately.

Issues Identified in the Horsley Witten Report

The Class II UIC Program is complex, consisting of several components that have distinct attributes and therefore require focused sets of regulations, compliance approaches, and review requirements. Given the rapid evolution of technologies and industry practices to extract more oil and gas from the State's mature fields, regulations developed even a decade ago may not fully address all of the issues created by what is now routine industry practice.

Horsley Witten included several recommendations pertaining to the practices, processes and policies of the Division used to implement the State's oil and gas regulations (Enclosure C). Report recommendations address a wide range of the Division's practices, activities and regulations, either directly or indirectly, in these areas:

- The definition and protection of underground sources of drinking water (USDW) area of review (AOR) and zone of endangering influence (ZEI)
- Well construction and cementing requirements
- Plugging and abandoning requirements
- Requirements for fluid disposal
- Requirements for monitoring of zone pressure
- Annual project reviews
- Well monitoring requirements
- Idle-well planning and testing program
- Financial responsibility requirements
- Cyclic steam injection wells
- Production from diatomite

Regulation Development

Many aspects of the recommendations of the Horsley Witten report can be implemented through existing Division regulations. However, others will require new regulation. Moreover, though cyclic steam injection wells and techniques employed for oil production in diatomite formations were not specifically addressed in the Horsley Witten report, they are extensively used in California, and existing regulations in these areas can be improved.

The Division has not had significant changes to its UIC regulations since the original primacy application. Regulatory amendments will be pursued through a rulemaking process to address these needs. The Division's goal is to ensure its regulations:

- Protect public health, the environment, and resources
- Address the UIC program mandates
- Address industry practices now and into the foreseeable future
- Are developed with the public participation contemplated by statute
- Set predictable standards for the regulated community
- Are implemented and enforced properly

These regulations will be quite extensive and will take some time to develop. The Division anticipates scheduling workshops, public meetings and other outreach to discuss regulations to cover a range of topics. The workshops should include at least the following: US EPA, State Water Board, Regional Water Quality Control Boards, Department of Toxic Substances Control, Air Resources Board, oil and gas operators, county and city agencies, non-government organizations, and the general public.

Potential Areas for New and Modified Regulations

We envision that a thorough review of the UIC program, the necessary attendant revision of existing regulations, and the development of needed new regulatory measures will require a period of approximately three years. The areas in which the Division is contemplating new or modified regulations include:

- Well construction and cementing requirements
- Plugging and abandoning requirements
- Evaluation of the zone of endangering influence (ZEI)
- Requirements for fluid disposal
- Requirements for monitoring of zone pressure
- Annual project reviews
- Well monitoring requirements
- Inspections and compliance/enforcement practices and tools
- Idle-well planning and testing program
- Cyclic steam injection wells
- Production from diatomite

Exclusive of proposed program revisions and aquifer exemption, the following milestones need to be met:

- Review of each and all current UIC projects for completeness of records and development of a list of deficiencies.
- Meetings with operators to review records and project deficiencies, and develop a compliance schedule (exclusive of aquifer exemptions).
- Initiate and complete rulemaking as a comprehensive package.

The Division will prepare a more detailed work plan for UIC rulemaking by April 15, 2015.

Searchable Database for Class II Wells

Activities to review UIC projects, check and revise data on all injection wells, and the development of aquifer exemption applications will all drive improvement in the Division's data that in turn will drive the need for vastly improved data management systems.

The Division's data management systems need significant upgrades. In response to the demands created by the requirements of the well stimulation program as a result of Senate Bill 4, the Division has hired additional GIS staff whose combined capabilities will be sufficient to manage all of the Division's needs. However, other aspects of the data management problem will be more difficult to resolve and will be conducted continuously in the background as project reviews, well reviews, and aquifer exemption information are compiled in a GIS environment.

You asked for a forecast of when the Division might be able to have a fully searchable database of injection wells available. Unfortunately, we cannot respond with specificity to this request due to inadequacies in the data management environment itself, and current lack of financial resources needed to create an adequate environment. The Division is, however, strongly committed to this effort and will follow up with US EPA when we can provide a more definitive answer.

The Division has created a team to develop a Feasibility Study Report (FSR) that will consider the Division's current and future requirements for data management and the kind of data environment that is needed for the Division to serve all stakeholders far more efficiently and effectively in the future. The FSR is a fundamental first step in the State's IT-procurement process and will be completed in December 2015. An approved

FSR will lead to a budget change proposal to seek the funds needed for system development.

Communication Plans

The closure of injection wells in Kern County during the summer of 2014, has required focused attention to communication with key stakeholder groups. These include industry, environmental organizations, elected officials – especially the state and federal elected representatives – the press, and via the press, the public.

The Division and the State Water Board have responded to a large number of stakeholder and public inquiries, and, to enhance public awareness, have developed frequently asked questions, statements, and presentations delivered at numerous public fora.

In short, much preparatory work has been accomplished. However we will continue to build on this communications foundation with additional attention to meet growing inquiries. We take seriously our responsibility to address growing public concern and press inquiries in a timely and informative manner.

Communication and outreach can be amplified by providing regularly updated information on the UIC program, background documents and reports, frequently asked questions, and work status on priority items noted above, specifically aquifer exemption applications, all clearly linked on the Division's web page. This page will serve as a clearinghouse for information on program activities, items of interest to stakeholders, and meeting and other notifications.

The Division and the State Water Board will continue to meet regularly with industry, environmental and other non-governmental organizations, elected officials, as well as US EPA.

CONCLUSION

The severe drought emergency, new regulations for well stimulation with ground water monitoring and other requirements, as well as long overdue revisions to the UIC program, have fundamentally changed how the Division and the State Water Board work together to protect public health and ensure the security of the State's

groundwater resources. We are committed to making this relationship effective so that the State can achieve full compliance with the SWDA, and we are committed to revising the UIC program efficiently, and with public safety as a first priority. We look forward to continuing our active dialog with you and to advancing our Federal-State partnership.

Sincerely,

Steve Bohlen
State Oil and Gas Supervisor

Sincerely,

Jonathan Bishop
Chief Deputy Director

Attachments

cc: Cliff Rechtschaffen, Governor's Office
John Laird, Natural Resources Agency
Matthew Rodriquez, CalEPA

Enclosure A: Division's November 16, 2012 Response to Report of Horsley Witten Group

NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

DEPARTMENT OF CONSERVATION

Managing California's Working Lands

DIVISION OF OIL, GAS, & GEOTHERMAL RESOURCES

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November 16, 2012

David Albright, Manager
Ground Water Office
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Mr. Albright:

The Division of Oil, Gas, and Geothermal Resources (Division) has reviewed the California Class II UIC Program Review report, prepared by Horsley Witten Group, Inc. (the Horsley Report), and has developed a plan to address the concerns and recommendations referenced in the report. As we have previously discussed, the Division began to evaluate its Underground Injection Control (UIC) program in 2009 with the hopes of bringing the program into conformance with state laws and regulations. Although we have improved our UIC program, and continue to evaluate it, the Division is aware that more work is required.

In your letter dated July 18, 2011, US EPA requested an action plan that includes clarification, improved procedures, and consistent standardized implementation in several areas, including:

- UIC staff qualifications;
- annual project reviews;
- mechanical integrity surveys and testing;
- inspections and compliance/enforcement practices and tools;
- idle well planning and testing program;
- financial responsibility requirements; and
- plugging and abandonment requirements.

Attached, please find the Division's plan to address the concerns of the US EPA and to identify those areas where the Division can improve its UIC program to more fully advance the objectives of the Safe Drinking Water Act. The Division views this action plan as a living document, which can be updated to incorporate any additional needed changes.

The Division looks forward to continuing our long-standing partnership with US EPA in protecting California's water resources. This plan will provide guidance as we update our UIC Program. We welcome your feedback and discussions regarding the elements in this action plan.

Sincerely,

Tim Kustic
State Oil and Gas Supervisor

cc: Mark Nechodom, Director, Department of Conservation
Rob Habel, Chief Deputy
Dan Wermiel, Technical Program Manager
Jerry Salera, UIC Program Manager

Department of Conservation
Division of Oil, Gas, and Geothermal Resources

Underground Injection Control Action Plan

RESPONSE TO THE US EPA JUNE 2011 REVIEW OF CALIFORNIA'S UIC PROGRAM

Background and Introduction

The EPA approved the Division of Oil, Gas, and Geothermal Resources' (Division, or DOGGR) application for primacy in the regulation of Class II injection wells under section 1425 of the Safe Drinking Water Act in March 1983. This approval gave the Division primary responsibility and authority over all Class II injection wells in the State of California. The EPA remains a Division regulatory partner with Division oversight authority and separate enforcement authority for Class II well operators. Class II wells inject fluids associated with oil and natural gas production.

The Division is fully committed to implementing a strong Underground Injection Control (UIC) program and will continue to pursue additional resources to address program growth and/or UIC well count increases.

This Action Plan is in response to a review of California's UIC program, requested by EPA's Region Nine Ground Water Office, and performed by the Horsley Witten Group. The Horsley Report, March 2011 (Report) was submitted to EPA in June 2011, and forwarded to the Division on July 18, 2011.

The Report included several recommendations pertaining to the practices, processes and policies of the Division used to implement the State's oil and gas regulations. To address a number of Report recommendations and other needed UIC regulatory updates, the Division will begin a rulemaking in 2013 to update the UIC program, well construction, and plugging and abandonment regulations. Additionally, the Division will determine whether statutory changes are needed and work with the California Legislature as necessary.

It is important to note the Division has added 43 staff positions during the past three years; these staff are working in UIC program or other closely related programs. Additionally, the Division implemented an internal review processes such as audits and mandatory Headquarters technical reviews to ensure greater compliance with UIC mandates.

The Division has followed the Report's format in this Action Plan and responded to each recommendation as presented in the Report. Each recommendation is presented in summary form below in bulleted paragraphs using italicized text.

USDW DEFINITION AND PROTECTION

- *The DOGGR Class II UIC Program should address the lack of clarity regarding USDW protection and ensure that all USDWs are fully protected from fluid movement and resulting degradation. USDWs containing more than 3,000 mg/l TDS should be protected as much as fresh water aquifers are protected in the permitting, construction, operation, and abandonment of injection wells.*

The Division's UIC program protects underground sources of drinking water (USDW) and requires that all injection is confined to the approved zone of injection. When the injection fluid is confined to the intended zone, all other zones and waters are protected.

Sections 3220 and 3228 of the California Public Resources Code (PRC) require zonal isolation. These standards have been followed for setting casing in, and plugging and abandonment of, all wells, including injection wells. Since these statutes predate the Safe Drinking Water Act, the USDW term is not found in state law.

During the rulemaking process to begin in 2013, the Division will pursue, as necessary, additional plugging and cementing requirements to increase USDW protection.

AREA OF REVIEW / ZONE OF ENDANGERING INFLUENCE

These recommendations address area of review/zone of endangering influence (AOR/ZEI) determinations, well construction practices and the status of wells located within the AOR, and corrective action requirements.

AOR/ZEI Determinations

- *The ZEI should be calculated, especially for disposal wells, with an accurate representation or reasonable estimate of all the relevant parameters that determine the ZEI, including the static pressures of the injection zone and USDWs in the project area.*
- *Disposal into non-hydrocarbon zones and normally* [sic] *pressure hydrocarbon bearing zones should be carefully monitored for reservoir pressure increases beyond normal hydrostatic pressures that could cause the ZEI to increase beyond the AOR over time.*
- *A fall-off pressure test should be run to determine the static reservoir pressure in wells in which shut-in pressures do not fall to zero after an*

extended shut-in period. If not done, the permit to inject should be rescinded.

- *The ZEI calculations should be reviewed if fall-off test results indicate higher than normal hydrostatic pressure in the injection zone. If the original AOR is smaller than the ZEI, the AOR should be expanded, or the permit to inject should be rescinded.*

Well Construction Practices and Status of Wells Located within the AOR

- *When casing repairs occur or when wells are plugged and abandoned, cement placement should be required at the base of USDWs in injection wells and AOR wells.*
- *Unless USDWs are known to be absent in the area, new injection wells should be required to have long string casing cemented to the surface.*

As outlined in our Primacy Application (ftp://ftp.consrv.ca.gov/pub/oil/publications/safe_water.pdf), the Division utilizes the one-quarter (1/4) mile fixed radius; if appropriate data is available, a radial flow equation may also be used to determine the ZEI. Although the Division has typically utilized the one-quarter mile fixed radius, we are now using other methods, such as Bernard's equation, the modified Theis equation, and equations included in the EPA's publication *Radius of Pressure Influence of Injection* (EPA-066/2-79-170) to determine the ZEI. The Division is pursuing new requirements for waste fluid disposal wells, and will consider including a more in-depth evaluation of the ZEI.

The Division is concerned with any injection well where injection zone pressure exceeds hydrostatic pressure. This may indicate an over-pressurized injection zone and a greater threat of non-confinement. In these cases, the Division looks at the ZEI and evaluates all wellbores within the ZEI to ensure fluid confinement to the intended zone of injection. In addition to the AOR, the Division requires mechanical integrity testing of all injection wells on a periodic basis. If a well lacks mechanical integrity, the Division requires the operator to immediately cease injection and to repair the well.

As for well construction requirements, the Division's long-standing requirements set by regulation dictate isolation of all oil and gas zones and any underground or surface water suitable for irrigation or domestic purposes. This is accomplished by requiring the cementing of casing and the placement of cement plugs. In addition, when wells are plugged and abandoned, the Division requires the use of heavy drilling mud in those portions of the hole that do not have cement. All these requirements will be evaluated for adequacy and updated as necessary in the rulemaking to

begin in 2013 to ensure UIC program requirements are adequate for USDW protection.

DIVISION ANNUAL PROJECT REVIEW

- *This recommendation addresses records of well activity, pressures, inactive well and noncompliance data associated with injection well projects. Comprehensive project reviews should be conducted annually for all active injection well projects, including meetings with the operators for the most critical projects.*

The Division is fully committed to comprehensive project reviews. There are now two processes in place to address this concern -- a project audit, and an annual project review.

The Division has acquired additional staff who will audit injection projects to ensure that the projects are:

- permitted in accordance with state mandates;
- continued in compliance with mandates and approvals; and
- monitored and tested to ensure that fluid is injected into the intended zone.

This practice is authorized by the broad protection mandates of PRC section 3106 (a).

Additionally, the Division has increased UIC staff to ensure an annual project review for all injection projects. This amounts to a review of District office project data, and when necessary, a corresponding request that operators submit any missing data. Division staff will also meet with operators to discuss injection project operations to ensure that projects are operating in accordance with their project applications and approvals.

MONITORING PROGRAM

These monitoring program recommendations address mechanical integrity tests (MIT) and maximum allowable surface pressure (MASP).

Mechanical Integrity Tests

- *SAPT pressures equal to the maximum allowable surface injection pressure should be required if it will not cause damage to the casing. The newer wells should be able to withstand the MASP.*
- *If tested at less than the MASP, more frequent SAPTs and monitoring/reporting for anomalous pressure on the annulus should be required.*
- *Static temperature logs should be required more often in slimhole/tubingless completions where USDWs are present and especially for USDWs that are protected by only one casing string and/or lack cement at the base of USDWs.*

- *Cement bond logs should be required in new and newly converted injection wells unless USDWs are known to be absent in the area.*
- *Static temperature logs should be required if an existing well lacks sufficient cement at the base of USDWs, and/or squeeze cementing should be considered at the USDW base to ensure isolation from fluid movement.*

Maximum Allowable Surface Injection Pressures

- *Injection pressure should be maintained below fracture pressure in all new and existing projects, as determined by approved SRTs.*
- *SRTs should be required in new wells to determine the fracture pressure of the injection zone unless the formation fracture gradient is known with acceptable confidence based on SRTs in nearby wells.*
- *A pressure gauge should be required to measure bottom-hole pressures in SRTs directly rather than relying on calculation of friction losses from surface pressure measurements and injection rates.*

The Division now mandates that the Standard Annular Pressure Test (SAPT) be performed either to the approved injection pressure or 200 psi, whichever is higher. The Division does not allow variance from this policy unless there is the potential to damage well casing.

Since continuous monitoring of the annular space has advantages over the once-every-5-years SAPT, the Division now allows a positive-pressure annulus monitoring system with regular reporting with a lower-pressure, 5-year SAPT. These two testing options verify annular integrity while providing flexibility to operators.

The Division agrees that if wells are completed by way of slimhole/tubingless completions, static temperature logs should be required more often than for traditional completions. Division staff is moving forward to develop a policy to address this issue; if additional regulations are necessary, the Division will include this item in the rulemaking to begin in 2013.

The Division's regulations require that injection pressure be maintained below the fracture pressure as determined by a Step Rate Test (SRT). The Division has implemented a new SRT policy, based largely on EPA's procedures, which require downhole pressure monitoring. These improvements, along with additional field inspection staff and upgrades to electronic data management systems, increase the Division's oversight of injection operations, particularly the injection pressure.

INSPECTIONS AND COMPLIANCE / ENFORCEMENT PRACTICES AND TOOLS

- *A high priority should be placed for inspection of wells in or near residential areas and where USDWs are present.*
- *Cement placement operations should be witnessed to ensure the correct volumes and quality of cement are pumped into a well.*
- *Witnessing RATs in enhanced recovery wells should be given a higher priority, especially where USDWs may be present. At least 25 percent of RATs and all SAPTs in wells where USDWs are present should be witnessed.*
- *Whenever possible, districts should avoid giving advance notice of routine inspections to operators.*
- *Copies of an inspection report should be provided to the operator whether or not deficiencies are found during inspections.*
- *The installation of a pressure gauge on the tubing and the casing/tubing annulus should be required as a permanent fixture on all injection wells.*
- *Wells that fail MITs should be repaired or plugged and abandoned within a set time period, preferably within six months or sooner depending on the nature of the leak and potential threat to USDWs.*

The Division has successfully pursued additional UIC field staffing resources to increase UIC oversight in all areas. Although the Division regulations do not distinguish between rural and urban injection wells, the Division does allocate additional resources to oil fields in highly urbanized areas.

The Division's additional UIC resources have increased its oversight of wells in direct relation to their priority. The Division places a higher priority on inspecting water disposal wells which can pose a greater risk of contaminating USDW and fresh water.

The Division requires the witnessing of cement plugging operations. The witnessing of the plugging operations continues to be one of the highest priorities for Division field staff. In the office, detailed reviews of well work histories by Division engineers determine whether plugging operations comply with State mandates. If not, remedial work is ordered. Additional staffing, along with increased training, is ensuring the Division is properly evaluating cementing operations.

The Division has a goal to witness at least 25% of the Mechanical Integrity Tests (MIT), with a higher emphasis on disposal wells. Once new UIC personnel are fully trained the Division intends to increase this percentage.

The Division has been evaluating the performance of cyclic steam wells, which should be tested at least once a year, or immediately if evidence of casing damage or failure is found. This testing requirement is supported by data showing that cyclic steam wells undergo more stress than other types of injection wells. The Division will address additional cyclic steam well testing in the rulemaking to begin in 2013.

When staff witness detailed tests, a report is provided to the operator. In addition to witnessing tests, the Division performs thousands of inspections a year without prior notice to the operators. Because of the volume of inspections, the Division only documents that an inspection was performed and what deficiencies were found. The list of deficiencies is included in a letter to the operator, which details what must be done and the timeframe to bring the operation into compliance.

The permanent installation of pressure gauges on UIC wells is not a current requirement. With technological advancements, capturing pressure data is non-burdensome to operators. In 2013 when the Division moves forward with updating its UIC regulations, pressure monitoring via a gauge or equivalent equipment will be pursued.

If the MIT should indicate a mechanical integrity issue, the well is required to be shut-in immediately. The Division does not allow injection until the well is repaired. If the well should become idle (i.e. no injection for six continuous months over a five-year period) the well previously fell under the Division's idle well program (IWP) only. The IWP, which includes fluid level and casing integrity testing, is designed to eliminate the potential threat caused by idle wells. In addition to IWP, the Division has changed processes to ensure idle injection wells remain within the UIC program to ensure UIC program testing is conducted. Since current regulations lack clarity on when a well is to be repaired or plugged and abandoned, the Division will pursue such clarity in the rulemaking to begin in 2013.

IDLE WELL PLANNING AND TESTING PROGRAM

- *The idle well management and testing guidelines at Section 138 in the MOI should be modified to clarify which provisions apply statewide and which apply only to District 4.*
- *Idle well fees and bond/escrow amounts should be reviewed and increased amounts to levels that would encourage operators to reactivate or plug idle wells.*
- *The testing program should be modified to base the fluid level survey pass/fail results on the rise of fluid to the base of USDWs rather than the BFW.*
- *SAPTs should be required in wells after two years of inactivity and every two years after that where USDWs are present.*

- *Regardless of the fluid level survey results, an SAPT should be required if USDWs are present in wells with tubing and packers installed.*
- *Bridge plugs or cement plugs above the injection and below the base of USDWs should be required where USDWs are present in wells lacking tubing and packers. In addition, wells should be required to successfully pass an SAPT to remain in idle status.*
- *Idle wells that fail the SAPT should be repaired or plugged and abandoned within six months in areas where USDWs are present or within 60 days if USDWs are at risk of potential fluid movement.*

The Division will revisit the Idle IWP through the legislative process with the intent to update the law to address the excessive number of idle wells. The solution will address the potential financial liability to the State, the obligations of owners, and intends to address all of the recommendations listed in the above. Although program implementation in the 1990s did result in a drop in the idle well count, the idle well count in recent years has stabilized or crept upward.

Since all wells within an AOR are evaluated for zonal isolation, idle wells are reviewed as part of the Division's UIC program. The Division's IWP is operated separately from the Division's UIC program. However, both programs share the common goal of resource protection.

FINANCIAL RESPONSIBILITY REQUIREMENTS

- *Bond amounts should be reviewed and updated periodically to cover current plugging and abandonment costs.*
- *The financial responsibility program should be modified to require bonds and other financial responsibility instruments be held until wells are plugged and abandoned.*
- *Operator funding requirements and the number of deserted wells plugged and abandoned should be increased to numbers that will significantly reduce the inventory of orphan/deserted wells each year.*

The current bonding amount requirements are specified in State statute passed by the legislature; these amounts are outdated and therefore insufficient. Additionally California oil and gas wells are not required to have life-of-the-well bonding. The Division is committed to working with the legislature, the oil and gas industry, and interested parties to bring bonding requirements up to reasonable standards.

To partially offset the financial liability to California's citizens from orphan wells, the legislature has provided the Division with funding for orphan well plugging and abandonments.

PLUGGING AND ABANDONMENT REQUIREMENTS

- *Cement plugs should be placed at the base of USDWS to ensure long-term protection from fluid movement into or between USDWs.*
- *The presence of a DIVISION inspector should be required during cement placement in P&A operations to monitor and ensure that adequate cement quality and adequate quantities are pumped into a well.*

The Division's mandates require resource protection. Because the Division's UIC program requires that the injected fluid remain confined to the intended zone and that all oil and gas zones are isolated, USDWs are protected from any harm caused by injection. These basic requirements have not changed since the Division was granted Class II primacy; however the Division will review them to determine if updates are necessary for USDW protection.

Division inspectors are present during well plugging operations. To address the volume of plugging operations, regulations require that Division staff witness either the plug placement or the plug tagging (location and hardness) to verify that the plugging operation was completed in accordance with State mandates.

UIC STAFF QUALIFICATIONS

- *UIC-specific training (e.g., EPA-sponsored UIC Inspector Training Course) should be provided to new and recent hires in the DIVISION UIC Program within one year of employment.*
- *Inspectors should be required to hold a petroleum engineering or geology bachelor's degree or related degree or equivalent college courses and relevant experience.*
- *Consideration should be taken to adjusting compensation and benefits for UIC professional positions to levels more consistent with the oil and gas industry.*

The work required from Division staff is based on geology and petroleum engineering, and the Division is taking steps to ensure that the most qualified individuals are hired and promoted.

In the UIC program, knowledge of geology and petroleum engineering are critical. In addition to the knowledge acquired through formal education, the Division is seeking individuals with experience relevant to the duties they will be performing.

The Division is assessing existing staff to identify weaknesses and is providing training to ensure that staff is knowledgeable in critical areas. In cases where staff lack the appropriate education, their job duties will be limited until they gain the necessary knowledge and skill sets.

The Division operates within the State's civil service compensation mandates. Salaries are negotiated with established bargaining units. The Division has interest in ensuring that compensation mandates meet our needs and will work with the administration to achieve our goals.

GENERAL AND DISTRICT-SPECIFIC RECOMMENDATIONS

Although this section of the Report listed specific cases in various District offices, the Division is responding in more general terms. The Division has had several meetings with staff to discuss and explain duties and expectations. It has been made clear to staff that these expectations will be enforced uniformly throughout the Division.

To address UIC shortcomings the Division aggressively pursued and was granted additional resources. The Division has focused on the evaluation of new and existing project applications, and field surveillance to ensure compliance. The recommendation to acquire software to aid staff with regulating UIC operations is being pursed along with other Division data management needs.

The Division's UIC program includes more than protecting USDWs and fresh water; the Division is also mandated to protect hydrocarbon zones from damage. Under our statutes, the protection of fresh water and USDW s coexists with the protection of hydrocarbon resources.

The Report recommends higher inspection priority for wells located near residential areas or when a USDW is present. Although inspection frequency is not addressed in regulations, additional staffing is augmenting Division resources for all UIC inspection needs. As indicated above, the Division's regulations do not distinguish between rural and urban injection wells. However, the Division does allocate additional resources to oil fields in highly urbanized areas.

Conclusion

The Division has been required to protect oil, gas, and water resources, since its inception in 1915. Some statutes have changed very little since that time. With changes in oilfield practices and advancements in technology, the Division has been slow to change its regulatory framework. Although the Division has a strong regulatory program, the Division is pursuing greater and more consistent enforcement.

In 2009, the Division began an in-depth evaluation of the UIC program and identified some barriers to full compliance. This was the first of many steps to bring the Division's program back into greater compliance with our mandates. The Division has already ensured greater UIC program compliance by:

- Providing staff greater understanding of UIC program mandates and staff expectations;
- Adding 43 additional staff to UIC and associate programs;
- Creating an internal audit program; and
- Requiring an additional technical review for UIC projects.

The Division acknowledges that some operators have operated UIC projects without meeting all the requirements outlined in statutes and regulations, and have resisted coming into full compliance. The Division is committed to bringing all operators into compliance.

The Division has not had significant changes to its UIC regulations since the original primacy application. Regulatory amendments will be pursued through a rulemaking process to address these needs. The Division's goal is to ensure our regulations are:

- adequate for protection of public health, the environment, and resources;
- adequate to address the UIC program mandates;
- flexible to address industry practices now and into the foreseeable future;
- created in a transparent process;
- predictable for the regulated community; and
- properly implemented and enforced.

Tim Kustic
State Oil and Gas Supervisor
November 2012

Enclosure B: Breakdown of Wells Potential Injecting into Non-exempt USDW Zones.

Enclosure B: Breakdown of Wells Potentially Injecting into Non-exempt USDW Zones and the Eleven Aquifers that have Historically Been Treated As Exempt

Breakdown review completed as of February 5, 2015

A. List of Water Disposal Wells – 532 Wells

Wells with…	Number of Wells	Number of wells issued orders	Number of wells (idle) in the 11 aquifers historically treated as exempt	Total Number of idle wells
Total Dissolved Solids (TDS) less than 3,000 mg/l	176	10	87 (20)	48
TDS between 3,000 and 10,000 mg/l	282	0	7 (4)	47
TDS under review or Data Requested	32	0	0	14
Subtotal	**490**	**10**	**94 (24)**	**109**
TDS greater than 10,000 mg/l (Wells being removed from list)	**42**			
Total	**532**			

B. List of Enhanced Oil Recovery Wells – 2021 Wells

Wells with…	Number of Wells	Number of wells issued orders	Number of wells (idle) in the 11 aquifers historically treated as exempt	Total Number of idle wells
Total Dissolved Solids (TDS) less than 3,000 mg/l	503	0	0	57
TDS between 3,000 and 10,000 mg/l	1327	0	0	225
TDS under review or Data Requested	157	0	0	62
Subtotal	**1987**	**0**	**0**	**344**
TDS greater than 10,000 mg/l (Wells being removed from list)	**34**			
Total	**2021**			

Enclosure C: Division and Water Board Aquifer Exemption Submittal and Review Process

Enclosure C: Division and Water Board Aquifer Exemption Submittal and Review Process

Division of Oil, Gas, and Geothermal Resources - Aquifer Exemption Submittal and Review Process

The Division of Oil, Gas, and Geothermal Resources (Division) is the state agency responsible for approving the injection of Class II fluid through an agreement with the United States Environmental Protection Agency (US EPA). Through this agreement, which is referred to as "Primacy", the Division is responsible for ensuring proposed zones of injection are exempt under the Safe Drinking Water Act and the criteria of 40 CFR 146.4. If an operator, or operators, wish to inject Class II fluid into a zone where the water quality is less than 10,000 mg/l TDS, and the zone has not been previously exempted, DOGGR will request data from the operator(s) to provide supporting documentation necessary to meet the aquifer exemption criteria as specified in 40 CFR 146.4 (see Exhibit A).

DOGGR's evaluation of the supporting documentation provided by the operator(s) must verify:

A) The aquifer does not currently serve as a source of drinking water.

This evaluation will/must include a survey of all water wells in the area of the proposed injection that are likely to have hydrologic conductivity with the zone of injection. Although the area of proposed injection may be smaller than the area of hydrologic conductivity, the supporting documentation must include data and hydrologic modeling that indicates the impacts of injection into the formation would not impact wells in the surrounding areas. Although this criteria states that the aquifer does not serve as a sources of drinking water, the State will evaluate this criterion to a higher standard, that of evaluating whether the aquifer is currently being used for beneficial uses.

B) The aquifer cannot now, and will not in the future, serve as a source of beneficial water because:

(1) The aquifer is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.

Supporting documentation must include such data as: production data and/or maps generated using geophysical logs to indicate the oil/water contact of historic and/or current hydrocarbon production. To extent the area will include future hydrocarbon production, the supporting documentation must include definitive data of potential future hydrocarbon production.

(2) The aquifer is situated at a depth or location that makes recovery of water for drinking water purposes economically or technologically impractical.

Data must be provided that clearly indicates the depth of all impacted water that has the potential to be used for beneficial purposes. Based on current data, water wells are being drilled deeper and deeper because of the drought. Many wells are being drill below 4,000 feet. Because wells are being drilled increasingly deeper, supporting data must be current and accurate.

(3) The aquifer is so contaminated that it would be economically or technologically impractical to render that water fit for beneficial use.

The drought has forced people of the State to use water of lesser quality to meet their needs. Data provided to support the claim that the water is so contaminated that it would be economically or technologically impractical to render that water fit for beneficial use must be current and accurate. Although the initial application will be evaluated by DOGGR, the State Water Resources Control Board and the Regional Water Quality Control Board(s) will be providing their expertise in the final analysis.

(4) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and other water quality constituents render the water to be of a certain quality that it is not reasonably expected to be used for beneficial uses.

During the process of evaluating the supporting documentation, the Division will confer with the State Water Board, and the operators as necessary to ensure the supporting data is accurate, up-to-date, and complete. Once the Division is satisfied with the supporting documentation, all supporting documentation, an application, and a draft letter to the US EPA requesting an aquifer exemption will be forwarded to the State Water Board for comment. If necessary, the Division and the State Water Board will meet and discuss the supporting documentation. Where appropriate, the operators affected by the proposed aquifer exemption may be included in meetings to clarify or to provide additional supporting documentation. If both the Division and the State Water Boards are in agreement, and if appropriate, the State Water Board will provide a written concurrence to the application.

Although timelines to prepare an aquifer exemption would be helpful, the variety in the complexity and size of each individual application makes it impossible to clarify a definitive timeline to prepare a specific application. However, it is the Division's goal to collect the necessary documentation, evaluate the supporting data, and provide a draft application to the State Water Board as soon as possible after receiving and verifying the required supporting documentation.

Once DOGGR and the State Water Board have reached an agreement to forward an aquifer exemption application to the US EPA, DOGGR will proceed with providing the appropriate public notification and solicit comments on the proposed aquifer exemption. Upon conclusion of the public comment period, and once comments have been appropriately addressed, the Division will forward the application to US EPA – Region 9.

State Water Resources Control Board - Aquifer Exemption Application and Review Process

Aquifer Exemption Application

1. Aquifer exemption applications, along with the Division of Oil, Gas, and Geothermal Resources' (DOGGR) recommendations are submitted to the State and Regional Water Quality Board (State Water Boards).
2. State Water Boards review the aquifer exemption application and DOGGR's recommendations (submittal review criteria detailed below). If necessary, this review may include meetings with DOGGR and operator(s) affect by the application. Review time will depend on the scale of the application and complexity of the proposed aquifer exemption (estimated 30 to 60 days).
3. State Water Boards and DOGGR will work towards reaching a consensus that the aquifer exemption application contains sufficient documented evidence to meet the criteria for an aquifer exemption. If additional information is required to justify an aquifer exemption, DOGGR and/or the State Water Board, depending on the information required, will request additional data from the affected operator(s). This is anticipated to take 15 to 30 days, depending on the data requested.

Every effort will be taken to work both with DOGGR and the affected operator(s) to resolve a lack of supporting data to justify an aquifer exemption.

Note: Review of an aquifer exemption application by the Water Boards is estimated to take 50 to 95 days. If additional information is required, the review process will be greater.

Review Process Criteria

The State Water Boards will review and evaluate the aquifer exemption application(s) in accordance with the following criteria:

1. Identification of underground sources of drinking water and exempted aquifers (Code of Federal Regulations, Title 40, Section 144.7)
2. U.S. Environmental Protection Agency (EPA) Guidance for Review and Approval of State Underground Injection Control (UIC) Programs and Revisions to Approved State Programs (Attachment 3: Guidelines for Reviewing Aquifer Exemption Requests)
3. EPA Aquifer Exemption Checklist
4. Technical demonstration by operator that the waste will remain in the exempted portion of the aquifer(s)

5. A review of current and future beneficial sources of water (e.g. domestic, municipal, irrigation, industrial)
6. Pertinent elements of Regional Water Board Basin Plan(s)

Upon conclusion of the State Water Boards review, the State Water Boards will provide one of the following findings:

a. If the State Water Boards concur with DOGGR that the aquifer exemption application meets the review criteria, the State Water Board will send a letter of concurrence to DOGGR, and copies to the affected operator(s). This is anticipated to take 5 days after concurring with DOGGR's recommendations.

b. If the State Water Boards concur that only portions of the aquifer exemption application meet the review criteria, the State Water Boards will send a letter to DOGGR and copies to the affected operator(s) requesting additional information. This is anticipated to take 5 days after making a determination.

c. If the State Water Boards conclude that the aquifer will not meet the criteria of an aquifer exemption, the State Water Boards will send a letter of its findings to DOGGR, with copies of these findings being sent to the affected operator(s). This is anticipated to take 5 days after making a determination.

Exhibit A - 40 CFR 146.4: Criteria for Exempted Aquifers

An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in § 146.3 may be determined under § 144.7 of this chapter to be an "exempted aquifer" for Class 1-V wells if it meets the criteria in paragraphs (a) through (c) of this section. Class VI wells must meet the criteria under paragraph (d) of this section:

(a) It does not currently serve as a source of drinking water; and

(b) It cannot now and will not in the future serve as a source of drinking water because:

(1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.

(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

(4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or

(c) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/1 and it is not reasonably expected to supply a public water system

(d) The areal extent of an aquifer exemption for a Class II enhanced oil recovery or enhanced gas recovery well may be expanded for the exclusive purpose of Class VI injection for geologic sequestration under§ 144.7(d) of this chapter if it meets the following criteria:

(1) It does not currently serve as a source of drinking water; and

(2) The total dissolved solids content of the ground water is more than 3,000 mg/1 and less than 10,000 mg/1; and

(3) It is not reasonably expected to supply a public water system.

Priorities, timelines and process

Taken in series, the sequence and timelines leading to a decision on aquifer exemptions will create a high level of concern that: 1. The body of work needing to be accomplished in a two-year period either cannot be managed, or, 2. The process will result in a large proportion of applications sent to US EPA in the final months of the period, without hope for resolution by February 15, 2017. Hence there is an essential need for the Water Board and DOGGR to work together in parallel as data are accrued by operators in support of exemptions to maximize parallel efforts and minimize serial efforts. To a large degree, such parallel work can only be possible if the data submitted are accurate, up to date and compiled in a readily accessible, standardized way. Further, the case for exemption must be rendered in a succinct, fact-driven form, supported by supporting data in appendices.

To facilitate an efficient workflow, DOGGR will establish a team of staff whose sole purpose will be to manage aquifer exemptions applications, and whose job it will be to know the status of any application at a given time and to work with operators to facilitate the development of a complete data set needed for the development of an aquifer exemption application to US EPA.

There are potentially as many as 100 aquifers for which portions are of interest to multiple operators and are likely candidates for consideration for exemption. Though a clear set of priorities is being developed in consultation with industry associations, who will assist in this effort, criteria that will drive priority consideration will include: date all data and justifications are certified as complete by DOGGR, impact on production levels within the state, impact on operator ability to produce, quality of the data submitted, timeliness of operator response to questions and data requests, and clarity of the case for exemption.

Enclosure D:
More Detailed Look At Administrative Concepts

ENCLOSURE D: MORE DETAILED LOOK AT ADMINISTRATIVE CONCEPTS

The following actions will be initiated through an appropriate combination of proposed rulemaking and enforceable orders.

1. Disposal into non-hydrocarbon producing zones[1] of aquifers that are clearly not exempt:

    a. No new disposal wells will be permitted unless and until EPA approves an aquifer exemption.
    b. Existing disposal wells:
        i. If potentially impacting water supply wells,[2] the Division will issue emergency order to operator to cease injection immediately. Water Board will issue an information order.[3]
        ii. If not potentially impacting water supply wells, and the aquifer is 3,000 mg/L total dissolved solids (TDS) or less, injection must cease no later than October 15, 2015 unless EPA approves an aquifer exemption. Water Board will issue an information order.
        iii. If not potentially impacting water supply wells, and the aquifer is more than 3,000 mg/L TDS and less than 10,000 mg/L TDS, injection must cease no later than February 15, 2017 unless EPA approves an aquifer exemption. Water Board will issue an information order. If there are supply wells in any portion of the aquifer, or if any portion of the aquifer is at a depth that may be reasonably expected to supply a public water system, the Division and the Water Board may issue orders on a higher priority basis.

2. Injection into hydrocarbon producing zones of aquifers that are clearly not exempt:

    a. If groundwater in the vicinity of the hydrocarbon producing zone does not currently have any beneficial use[4]

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[1] Hydrocarbon producing zone is the portion of an aquifer that "cannot now and will not serve as a source of drinking water" because: "It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible." (40 CFR § 146.4 (b)(1).)

[2] Injection wells potentially impacting water supply wells include injection wells into aquifers with 3,000 mg/L total dissolved solids (TDS) or less that meet either of the following criteria: (1) the uppermost depth of the injection zone is less than 1500 feet below ground surface (regardless of whether any existing supply wells are in the vicinity of the injection well), or (2) the injection depth is within 500 feet vertically and 1 mile horizontally of the screened portion of any existing water supply well.

[3] Water Board information order will require that the operator submit information related to the injection and the quality of groundwater.

[4] Note that this does not include any use of produced water.

i. New wells that are part of an approved project may be permitted with the express condition that permit expires on February 15, 2017, unless EPA approves an aquifer exemption.
ii. For existing wells, injection must cease by February 15, 2017, unless EPA approves an aquifer exemption.

b. If groundwater in the vicinity of the hydrocarbon producing zone has any current beneficial use
   i. No new permits will be issued.
   ii. For existing wells, injection must cease by February 15, 2017 (or sooner, depending on the use of the groundwater), unless EPA approves an aquifer exemption.

3. Injection into eleven aquifers with disputed exemption status:

   a. No new disposal wells will be permitted unless and until EPA approves an aquifer exemption evaluation. An exception may be made in the unusual case where the proposed injection well is part of an approved project, and an initial screening of the target zone shows that the zone contains hydrocarbons, has very high levels of naturally-occurring constituents (e.g., arsenic or boron), or there are other factors that make it unsuitable for beneficial use.
   b. Existing disposal wells:
      i. If potentially impacting water supply wells, the Division will issue emergency order to operator to cease injection immediately. Water Board will issue an information order.
      ii. If not potentially impacting water supply wells, injection must cease no later than February 15, 2017, unless EPA approves an aquifer evaluation. Water Board will issue an information order. If there are supply wells in any portion of the aquifer, or if any portion of the aquifer is at a depth that may be reasonably expected to supply a public water system, the Division and the Water Boards may issue orders on a higher priority basis.

4. The Division will submit any exemption requests or evaluations for the above three categories of aquifers over time, and with sufficient opportunity for EPA to review the requests and approve or disapprove all of them by February 15, 2017.